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EXAMINER

PHILPOTT, JUSTIN M

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,752

Applicant(s)

FURUKAWA, HIROSHI

Examiner

Justin M. Philpott

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed September 12, 2005 have been fully considered but they are not persuasive.
2. Specifically, applicant argues that the filter taught by H'mimy does not provide a filter which "equalizes the spread signals" and "solves the problem of reducing interference generated from other frequency distorted, coded signals" whereby "radio transmission channel frequency distortion is eliminated by equalizing the spread spectrum signal based on the frequency response of the radio transmission channel" (page 10, line 28 to page 11, line 4). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., provide a filter which "equalizes the spread signals" and "solves the problem of reducing interference generated from other frequency distorted, coded signals" whereby "radio transmission channel frequency distortion is eliminated by equalizing the spread spectrum signal based on the frequency response of the radio transmission channel") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Thus, applicant's argument is not persuasive. However, if applicant believes applicant's invention can be distinguished from H'mimy based upon the above-mentioned elements of applicant's invention, applicant is encouraged to amend the claims to accurately reflect these aspects of applicant's invention. As presently stated in applicant's claims, the phrase "equalization filter",

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a filter known in the art for “making equal or uniform”, does not encompass the above-mentioned elements, and is taught by the filter of H’mimy as discussed in the previous office action and repeated herein.

3. Additionally, applicant argues (page 11) that H’mimy does not teach equalizing a main signal before decoding or demodulating as recited in applicant’s new claims 9 and 10, respectively. However, newly cited art teaches such a limitation as discussed in the following office action. Further, applicant argues that claims 5-8 also teach an ordering of steps similar to that discussed regarding claims 9 and 10. However, the ordering is not specific in claims 5-8 (e.g., “before”, “after” and/or other indicators of specific ordering are not present in claims 5-8). Thus, applicant’s argument that claims 5-8 are not taught by AAPA in view of H’mimy because applicant’s invention comprises a specific order are not persuasive, since “unless the steps of a method actually recite an order, the steps are not ordinarily construed to require one”.

Interactive Gift Express, Inc. v. Compuserve, Inc., 231 F.3d 859, 875-76 (Fed. Cir. 2000).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Specifically, in the amendment filed September 12, 2005, applicant discloses that the amendment to claim 18 (i.e., lines 6-23 of claim 8) is supported by applicant's originally filed specification on "sheets 16 and 17" (see pages 9-10 of applicant's Remarks of September 12, 2005). However, applicant's originally filed specification does not contain "sheets 16 and 17", nor does it contain a page 16 or 17.

Since it appears that applicant's own file may differ from the official record, the following listing identifies what was originally filed in the instant application:

"Description" on pages 1-4, followed by an additional sheet "4/1 (ART 34 AMDT)", and continued on page 5 to 11 ["Technical Field" and "Background Art" begin on page 1, "Disclosure of Invention" begins on page 4, "Brief Explanation of the Drawings" begins on page 6, "Best Mode for Carrying out the Invention" begins on page 7, and one paragraph of "Industrial Applicability" begins on page 11 and concludes the entire specification as originally filed at the end of page 11];

originally filed claims are on page "10 ART 34 AMDT" (claims 1 and 2), "10/1 ART 34 AMDT" (claim 3), "11" (continued claim 3, and claims 4-5), "11/1 ART 34 AMDT" (continued claim 5, and claim 6), "12" (claims 7 and 8), "12/1 ART 34 AMDT" (three lines of continued claim 8 ending with "different,");

page "18" includes an abstract; and

three pages of figures (1/3, 2/3, 3/3) are provided (three figures per page consisting of figures 1-9).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of U.S. Patent No. 5,912,876 to H'mimy.

Regarding claim 1, AAPA teaches a mobile station receiving method on a down channel in a CDMA cellular system (specification, page 1, lines 15-26) in which a base station modulates, by using orthogonal pseudo random codes, transmission signals towards a plurality of mobile stations (specification, page 1, line 22 to page 2, line 4), transmits the modulated signals synchronously, while the mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different (specification, page 2, lines 3-15) (e.g., see also, generally, specification, pages 1-4), however, may not specifically disclose frequency characteristics of an equalization filter are inverse to an estimation result.

H'mimy also teaches a CDMA system such as in AAPA, and further, specifically teaches the system is characterized in that a mobile station comprises an equalization filter (e.g., filter 95, see FIG. 1) and a transmission estimation unit (e.g., accumulator 90), wherein the transmission estimation unit (e.g., accumulator 90) outputs an estimation result (e.g., estimated frequency response, see col. 4, lines 18-41) of frequency characteristics of a transmission channel (e.g., channel 50) and sets up the frequency characteristics of the equalization filter (e.g., filter 95) such that the frequency characteristics of the equalization filter are inverse to the estimation result (e.g., see col. 4, lines 22-34). Additionally, the teachings of H'mimy provide improved channel estimation by simplifying operation and resulting in instantaneous results (see col. 2, lines 5-49 and col. 4, lines 35-41). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA teachings of H'mimy to the CDMA system of AAPA in order to provide improved channel estimation by simplifying operation and resulting in instantaneous results.

Regarding claims 3 and 6, AAPA in view of H'mimy teaches the mobile station discussed above regarding claim 1, and further, AAPA teaches demodulating independently each of the modulated signals (e.g., via respective independent demodulation units 107-109) which pass through a plurality of the radio channels of which delay times are different, and combining the result (e.g., via combining unit 110). Still further, while AAPA may not specifically disclose an additional method of using a filter with frequency characteristics inverse to that of the radio channels, such a method is taught by H'mimy as discussed above regarding claim 1. That is, H'mimy teaches a mobile station comprises an equalization filter (e.g., filter 95, see FIG. 1) and a transmission estimation unit (e.g., accumulator 90), wherein the transmission estimation unit (e.g., accumulator 90) outputs an estimation result (e.g., estimated frequency response, see col. 4, lines 18-41) of frequency characteristics of a transmission channel (e.g., channel 50) and sets up the frequency characteristics of the equalization filter (e.g., filter 95) such that the frequency characteristics of the equalization filter are inverse to the estimation result (e.g., see col. 4, lines 22-34). Further, H'mimy teaches selecting an output with higher communication quality among other possible outputs by equalizing and demodulating steps (e.g., see col. 2, lines 19-49, col. 4, line 23 – col. 5, line 12, and FIGS. 1 and 2 regarding selection with respect to two methods following ACCs 80 and 90). Additionally, the teachings of H'mimy provide improved channel estimation by simplifying operation and resulting in instantaneous results (see col. 2, lines 5-49 and col. 4, lines 35-41). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA teachings of H'mimy to the CDMA system of AAPA in order to provide improved channel estimation by simplifying operation and resulting in instantaneous results.

Regarding claims 5 and 7, AAPA in view of H'mimy teaches the a communication system and a mobile station as discussed above regarding claim 1, and further, AAPA teaches an apparatus and method comprising the elements and respective steps of: a frequency conversion unit (e.g., frequency conversion unit 102 in prior art FIG. 5) for converting the modulation signals received by an antenna (e.g., antenna 101) into base band signals (e.g., see specification, page 2, lines 17-19), a channel estimation unit (e.g., detection unit 106) for detecting frequency characteristics of the radio channels on the basis of the modulated signals (e.g., see specification, page 2, line 19 to page 3, line 2), and a demodulation unit (e.g., 103-105 in conjunction with 107-109) for de-spreading and demodulating outputs (e.g., see specification page 2, line 23 to page 3, line 6). Further, as discussed above, H'mimy teaches an equalization filter unit (e.g., filter 95, see FIG. 1) of which frequency characteristics are inverse from that of the radio channels (e.g., see col. 4, lines 22-34), by using tap coefficients (e.g., select signals, see FIG. 2) from a channel estimation unit (e.g., ACC 80 in combination with 130 and 125). Additionally, as discussed above, the teachings of H'mimy provide improved channel estimation by simplifying operation and resulting in instantaneous results (see col. 2, lines 5-49 and col. 4, lines 35-41). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA teachings of H'mimy to the CDMA system of AAPA in order to provide improved channel estimation by simplifying operation and resulting in instantaneous results.

Regarding claim 8, AAPA teaches a mobile station receiving method on a down channel in a CDMA cellular system (specification, page 1, lines 15-26) in which a base station modulates, by using orthogonal pseudo random codes, transmission signals towards a plurality of

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mobile stations (specification, page 1, line 22 to page 2, line 4), transmits the modulated signals synchronously, while the mobile stations receive the modulated signals distorted by a plurality of radio channels of which delay times are different (specification, page 2, lines 3-15) (e.g., see also, generally, specification, pages 1-4), which is characterized in that the mobile station comprises a first receiving unit (e.g., unit 102 in FIG. 5), a second receiving unit (e.g., unit 107) and a selection unit (e.g., unit 110), wherein the first receiving unit (e.g., unit 102) comprises a frequency conversion unit (e.g., frequency conversion unit 102) for converting the modulated signals received by an antenna into base band signals (specification, page 2, lines 17-19); and a demodulator (e.g., demodulation unit 107) for demodulating outputs of a unit of which inputs are base band signals (specification, page 2, line 17 to page 3, line 6), however, AAPA may not specifically disclose a channel estimation unit and a filter unit with frequency characteristics of an equalization filter are inverse to an estimation result.

H'mimy also teaches a CDMA system such as in AAPA, and further, specifically teaches the system is characterized in that a mobile station comprises a filter unit (e.g., filter 95, see FIG. 1) and a channel estimation unit (e.g., accumulator 90), wherein the channel estimation unit (e.g., accumulator 90) detects frequency characteristics of radio channels on the basis of modulated signals and outputs an estimation result (e.g., estimated frequency response, see col. 4, lines 18-41) of the frequency characteristics of the radio channels (e.g., channel 50) and sets up the frequency characteristics of the filter unit (e.g., filter 95) such that the frequency characteristics of the filter are inverse to the estimation result (e.g., see col. 4, lines 22-34). Further, H'mimy teaches a second receiving unit comprises a combining unit for selecting an output with higher communication quality among other possible outputs by equalizing and demodulating steps (e.g.,

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see col. 2, lines 19-49, col. 4, line 23 – col. 5, line 12, and FIGS. 1 and 2 regarding selection with respect to two methods following ACCs 80 and 90). Also, as discussed above, AAPA teaches demodulating independently each of the modulated signals (e.g., via respective independent demodulation units 107-109) which pass through a plurality of the radio channels of which delay times are different, and combining the result (e.g., via combining unit 110). Additionally, the teachings of H'mimy provide improved channel estimation by simplifying operation and resulting in instantaneous results (see col. 2, lines 5-49 and col. 4, lines 35-41). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA teachings of H'mimy to the CDMA system of AAPA in order to provide improved channel estimation by simplifying operation and resulting in instantaneous results.

8. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of H'mimy, further in view of prior art recited in U.S. Patent No. 6,307,879 to Moriyama.

Regarding claims 2 and 4, AAPA in view of H'mimy teach the mobile station discussed above regarding claims 1 and 3, respectively, however may not specifically describe the filtering that is utilized. Moriyama also teaches a mobile station in a CDMA system (e.g., see col. 18, lines 56-59) and further, specifically describes a filter which is well known in the art of CDMA systems (e.g., prior art FIG. 5), wherein the filter comprises: a plurality of delay circuits which are connected in series (e.g., delay circuits 16a, see FIG. 5 and col. 3, line 44 – col. 4, line 61); a plurality of multipliers (e.g., multipliers 16b) each of which multiplies a prescribed weight coefficient (e.g., weight factor, see col. 3, lines 53-63) by the output from each delay circuit (e.g.,

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delay circuits 16a); and an adder (e.g., adder 16c) for adding the outputs from said multipliers (e.g., multipliers 16b), wherein modulated signals are equalized adaptively (e.g., filtering is adaptive, see col. 3, lines 44-52) as the distortions of the radio channels changes. Also, this well known filter (prior art FIG. 5) disclosed by Moriyama provides improved operation by minimizing error power (e.g., see col. 4, lines 62-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the well known filter embodiment of FIG. 5 in Moriyama to the filter of AAPA in view of H'mimy since such a teaching is well known in the art of filtering in a CDMA system and in order to provide improved operation by minimizing error power.

9. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of H'mimy, further in view of U.S. Patent No. 6,347,391 to Uesugi et al.

Regarding claims 9 and 10, AAPA in view of H'mimy teach the apparatus and method discussed above regarding claims 1 and 3, respectively, however, may not specifically require performing equalization before decoding or demodulating. Uesugi, like AAPA and H'mimy, also teaches an apparatus and method for CDMA communications, and specifically, discloses that performing equalization before decoding or demodulating is well known in the art (e.g., see FIG. 1 comprising equalizer 6 receiving a signal and performing equalization including compensating for distortion before sending the signal to a demodulator or decoder 7, whereafter decoded data 8 is received, see col. 1, lines 23-40). Further, Uesugi teaches the embodiment of FIG. 1 is a conventional structure well known in the art (e.g., see col. 1, lines 23-25, and see FIG. 1 comprising the PRIOR ART designation) which specifically is well known for overcoming the

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problem of multipath fading (e.g., see col. 1, lines 10-23). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the ordered equalization with decoding or demodulating as disclosed by Uesugi to be well known in the art to the apparatus and method of AAPA in view of H'mimy since such a teaching is both well known in the art and since such an implementation further overcomes the problem of multipath fading.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 6,130,894 and 6,266,350 to Ojard et al. both disclose a filtering step is performed before a step of decoding or demodulating (e.g., see FIGS. 7 and 8).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

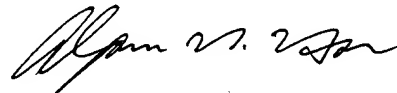
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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M. Philpott whose telephone number is 571.272.3162. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy D. Vu can be reached on 571.272.3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Justin M Philpott



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PRIMARY EXAMINER